

## CONTROL SYSTEM

Raymond Browning

George Anwar

Ali Jabbari

Lawrence A. Leske

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ABSTRACT

Control system for devices such as an audio reproduction  
10 system, an actuator device, an electromechanical device and a  
telephony device. The system includes control circuitry which  
receives an input signal and a signal indicative of a position  
of a portion of the controlled apparatus. The control circuit  
provides an output signal to the controlled apparatus to affect  
15 an operation of the controlled apparatus. The output signal  
provides control of the apparatus to compensate for one or more  
of: motor factor; spring factor; back electromotive force; and  
impedance of a coil in a driver of the controlled apparatus.  
The signal indicative of position is derived by one or more  
20 position indicator techniques such as an infrared LED and PIN  
diode combination, position dependent capacitance of one portion  
of the controlled apparatus with respect to another portion of  
the controlled apparatus, and impedance of a coil in the  
controlled apparatus. The control circuitry is configurable to  
25 control transconductance and/or transduction of the system being  
controlled. A technique is disclosed to detect and measure a  
cant of a voice coil transducer, the technique including  
measuring a capacitance between one portion of the voice coil  
transducer with respect to another portion of the voice coil  
30 transducer over a range of movement of the voice coil during  
operation.